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| EXAMINER |
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NEGRELLI, KARA B

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| ART UNIT | PAPER NUMBER |
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1796

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11/19/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| Office Action Summary | Application No. 10/588,759 | Applicant(s) ORTALDA, MARCO | |
| | Examiner KARA NEGRELLI | Art Unit 1796 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 4 and 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-7 and 9-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

TIN AND TRANSITION METAL FREE POLYURETHANE FOAM

DETAILED ACTION

Response to Amendment

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Any rejections stated in the previous Office Action and not repeated below are withdrawn.
3. The new grounds of rejection set forth below are necessitated by applicant's amendment filed on October 7, 2009. In particular, claim 1 has been amended to recite "integral" and "...d) a blowing agent comprising water." Claim 4 has been cancelled and new claims 20 and 21 have been added.
4. Applicants have amended claim 1 to include the limitation "integral" from claim 4 and a second limitation regarding water as a blowing agent from the specification. This presents the claims with a scope which was not previously examined. Thus, the following action is properly made FINAL.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 1-3, 5-7, and 9-21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cageao et al. (US 5,770,674).

8. Cageao et al. teach a polyurethane composition produced using the RIM process. The composition comprises a polyisocyanate (column 4, lines 26-28), an isocyanate reactive compound (column 4, line 29), and preferably from 0.5 to 5% of at least one catalyst (column 4, lines 48-50). The catalyst can comprise from 0.5 to 5% by weight of a metal carboxylate, (such as bismuth carboxylates, including bismuth neodecanoate, column 14, lines 37-39), and from 0.0 to 5% by weight of a tertiary amine catalyst (column 5, lines 31-49). Cageao et al. disclose an optional third catalyst comprising tin. Because the tin catalyst is optional, bismuth carboxylate can be added as the sole organic metal catalyst. The amount total amount of catalyst present, based on the amount of catalyst and isocyanate reactive component, is from 0.5 to 5% by weight (column 5, lines 31-49). The amounts of bismuth carboxylate catalyst and tertiary amine catalyst disclosed by Cageao et al. fall within the instantly claimed ratio range(s) (instant claims 3 and 16). Cageao et al. further teach that the composition may further comprise water as a co-reactant for use with the polyisocyanate (column 6, lines 61-63).

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9. Although Cageao does not expressly describe water as a “blowing agent,” the phrase “blowing agent,” as used in instant claim 1, is an intended use for water. Case law holds that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Water used in combination with an isocyanate would release carbon dioxide which would help foam the composition. Therefore, the composition of Cageao is seen to be no different than the instantly claimed invention.

10. The polyurethane compositions of Cageao may comprise the same components in the same amounts used to produce a flexible polyurethane, the same product, as the instantly claimed invention. Therefore, one of ordinary skill in the art would reasonably expect that when such components are used in these amounts, as Cageao teaches as an embodiment, the resultant polyurethane will have the same tear propagation resistance, shore A hardness, and density which is claimed in instant claim 1. Case law holds that a material and its properties are inseparable. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

11. Cageao does not expressly teach that the composition is “integral,” which is a property of the instantly claimed invention. However, the composition of Cageao et al. may comprise components which are identical to the components of the instantly claimed invention and the components may be used in the same amounts as in the

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instantly claimed invention. Therefore, one of ordinary skill in the art would reasonably expect the composition of Cageao to have the same properties of the instantly claimed invention. Case law holds that a material and its properties are inseparable. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

12. Cageao et al. do not expressly teach that the polyurethane foam is used to produce a “shoe sole,” such a phrase is a use without any defining structure (for example a layer or film can read on the claimed shoe sole). However, the present claims fail to contain any limitations concerning the structure of what the “shoe sole” is, therefore the claims fail to distinguish themselves from the prior art. The composition of Cageao et al. may comprise components which are identical to the components of the instantly claimed invention, and a structure which can be the claimed shoe sole. As Leckhart et al. (US 4,584,362) shows, polyurethane elastomers which can be used as gaskets (as taught by Cageao et al.), which can also be used as a shoe sole (column 25-34). Because of favorable rheology of the elastomer formation, they can be use to form intricate and varying forms (Leckhart et al., (US 4,584,362, column 1, lines 25-30). Therefore, it would have been obvious to one of ordinary skill in the art to use the composition of Cageao et al. as a shoe sole.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 1-2, 5-7, 9-16, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Volkert et al. (US 6,331,577) and further in view of Burckhardt et al. (US 2006/0180274).

15. Volkert et al. teach a flexible, integral, polyurethane foam (column 2, lines 24-25) comprising a polyisocyanate, at least one compound containing at least 2 reactive hydrogen atoms having a molecular weight of from 1000 to 8000, and catalysts, if desired (column 2, lines 40-46), wherein the foams can have a density of below 400 g/l, (column 2, lines 25-28), a shore A hardness of 52, and an elongation of 381% (see Table 3 and 4 of Volkert et al.). Volkert et al. do not elaborate on the tear propagation resistance. However, since the foams have the same tensile strength as instantly claimed (See Table 4 of Volkert et al. and Table 2 of in the instant application), one of ordinary skill in the art would reasonably conclude that the foams of Volkert et al. have the same tear propagation as the instantly claimed invention.

16. Volkert et al. further teach that the at least one compound containing at least 2 reactive hydrogen atoms can comprise a graft polyol comprising mixtures of styrene and acrylonitrile in a weight ratio of from 90:10 to 10:90, which is used in a polyether polyol (column 4, lines 3-10). Volkert et al. further teach that polyester polyols may also be used as the at least one compound containing at least 2 reactive hydrogen atoms, which are prepared from organic dicarboxylic acids, including maleic acid, or their corresponding dicarboxylic acid anhydrides (maleic anhydride, pertaining to the

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macromer of instant claim 14). Volkert et al. further teach that the foam is used in shoe soles (column 6, lines 12-20).

17. Volkert et al. do not expressly teach the use of a catalyst comprising bismuth carboxylate in an amount of from 0.2 to 2% by weight based on the total weight of component b), and at least one tertiary amine. Volkert et al. also do not expressly teach that bismuth carboxylate is added as the sole organic metal catalyst to the reaction of the components a) and b), that the bismuth carboxylate results from carboxylic acids having from 6 to 12 carbon atoms, that the bismuth catalyst comprises bismuth neodecanoate, bismuth-2-ethylhexanoate or bismuth octanoate.

18. However, Burkhardt et al. teach polyurethane compositions comprising polyisocyanate, polyols, and a bismuth catalyst (paragraph [0007] comprising bismuth octoate or bismuth neodecanoate (paragraph [0022]), said catalyst of which are prepared in an inert medium such as a solvent (paragraph [0025]), said solvent of which can comprise neodecanoic acid (pertaining to instant claim 19). The composition may further comprise a tertiary amine catalyst (paragraph [0034]). Burkhardt et al. teach examples in which bismuth is present as the sole organometallic catalyst (see paragraph [0047]). The bismuth catalyst is present in an amount of 0.5% by weight based on the weight of the polyols present based on: 259 g polyol Accalim® 4200N and 517 g of polyol Caradol® MD34-02 were used to prepare the isocyanate terminated polyurethane prepolymer, of which 0.06% by weight was bismuth compound. $(259 + 517) = 776$; $0.0006 \cdot 776\text{g} = 0.46\%$ bismuth catalyst. See examples 1-9, paragraphs [0047]-[0048]).

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19. Burkhardt et al. further teach that the bismuth catalyst must be activated by water. The addition of water to the catalyst leads to a rapid build-up of strength and to the rapid curing of the polyurethane composition (paragraph [0033]).

20. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the bismuth catalyst compound taught by Burkhardt et al. in the composition of Volkert et al. because catalysts that comprise tin compounds in combination with tertiary amines account for toxicological concerns. Bismuth catalysts, particularly bismuth carboxylates such as bismuth octanoate, have a far lower acute toxicity than tin catalysts and are given distinct preference over tin catalyst (paragraphs [0002]-[0003]).

21. Furthermore, in view of Burkhardt's recognition that bismuth carboxylate catalysts and tin catalysts are equivalent and interchangeable, it would have been obvious to one of ordinary skill in the art to substitute tin catalysts with bismuth carboxylates and thereby arrive at the present invention. Case law holds that the mere substitution of an equivalent (something equal in value or meaning, as taught by analogous prior art) is not an act of invention; where equivalency is known to the prior art, the substitution of one equivalent for another is not patentable. See *In re Ruff* 118 USPQ 343 (CCPA 1958).

Response to Arguments

22. Applicant argues that the addition of the limitations of independent claim 4 into claim 1 renders the rejection over Cageao not anticipatory.

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23. Applicant's arguments with respect to claims 1-3, 5-7, and 9-21 over Cageao et al. have been considered but are moot in view of the new ground(s) of rejection.

24. Applicant's arguments filed October 7, 2009 with regards to Burkhardt et al. in view of Volkert et al. have been fully considered but they are not persuasive.

25. Applicant argues that Burkhardt et al. teaches that the catalytic activity in respect of the isocyanate/water reaction is much lower than that of tin catalyst and storage stability is problematic, even in the absence of water (paragraph [0003]).

26. Applicants' argument is not persuasive. While paragraph [0003] of Burkhardt et al. does recite that the catalytic activity in respect of the isocyanate/water reaction is much lower than that of tin catalyst and storage stability is problematic, even in the absence of water, Burkhardt et al. teach that the bismuth catalyst must be activated by water. The addition of water to the catalyst leads to a rapid build-up of strength and to the rapid curing of the polyurethane composition (paragraph [0033]). Burkhardt et al. further teach that the catalytic activity of bismuth catalyst is only slightly reduced by the addition of water, and that the reduction in activity has no deleterious consequences on the properties of the polyurethane composition of the invention (paragraph [0033]). Instead, on the contrary, the reduction in catalytic activity caused by the addition of water may even be desirable, since the processability period of the composition after application is increased further by the viscosity rising only slowly at the beginning (paragraph [0033]).

27. Applicants' argument that Burkhardt et al. teach against the use of a bismuth catalyst in situations where isocyanate/water reaction is intended to be carried out is not

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persuasive. Burkhardt et al. teach a composition comprising the requisite catalyst combination and further comprising isocyanate and water (paragraph [0016], [0022], and [0033]. The reduction in catalytic activity is taught as desirable, and therefore Burkhardt et al. do not teach against the use of bismuth catalysts in combination with isocyanate and water. Therefore, it would have been obvious to use the bismuth catalysts of Burkhardt et al. in the invention of Volkert because bismuth catalysts have a far lower acute toxicity than tin catalysts and are given distinct preference over tin catalyst (paragraphs [0002]-[0003]).

28. Applicant argues that Burkhardt et al. teach that other catalyst may be added such as a combination of a tin compound and a tertiary amine (paragraph [0034]).

29. Applicants' argument is not persuasive. Burkhardt et al. teach that other catalysts such as tin compounds **or** tertiary amine catalyst may be used in addition to bismuth catalysts. Burkhardt et al. teach that admixing catalyst **may** be advantageous for certain applications (paragraph [0034]). Burkhardt et al. does not teach that the tertiary amines and tin catalyst must be used together. Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to use either one or the other in combination with the disclosed bismuth catalysts, depending on the application of the formed polyurethane.

30. In addition, note that while Burkhardt et al. do not disclose all the features of the present claimed invention, Burkhardt et al. is used as teaching reference, and therefore, it is not necessary for this secondary reference to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA

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1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather this reference teaches a certain concept, a bismuth carboxylate catalyst used in a polyurethane composition, and in combination with the primary reference, discloses the presently claimed invention.

Conclusion

31. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a), because of the limitation regarding water as a blowing agent from the specification. This presents the claims with a scope which was not previously examined.

32. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARA NEGRELLI whose telephone number is

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(571)270-7338. The examiner can normally be reached on Monday through Friday 8:00 am EST to 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571)272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KARA NEGRELLI/
Examiner, Art Unit 1796

/Randy Gulakowski/
Supervisory Patent Examiner, Art Unit 1796